

Appendix:

MCE1.1.1.c. The Matrix Correlation Graduate Profile of the Master of Education in Chemistry and the Subject Specific Criteria

		LEARNING OUTCOMES														
		ATTITUDE & VALUE				WORK ABILITY						KNOWLEDGE ASSIGNMENT			AUTHORITY & RESPONSIBILITY	
		LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9	LO10	LO11	LO12	LO13	LO14	LO15
Programme Objectives	PO1	1.1	3.2 to 3.6			2.2 to 2.8	3.2 to 3.6			3.2 to 3.6		1.2 to 1.3			1.3	1.2 to 1.3
	PO2		3.6				3.6		1.2 to 1.3 & 2.1	3.6			3.2 to 3.6			
	PO3															
	PO4					2.2 to 2.8			1.2 to 1.3 & 2.1	2.2 to 2.8		1.2 to 1.3		2.2 to 2.8	1.3	1.2 to 1.3
	PO5		2.8	1.4 to 1.5												
	PO6					2.2 to 2.8			1.2 to 1.3 & 2.1	2.2 to 2.8		1.2 to 1.3		2.2 to 2.8	1.3	1.2 to 1.3
	PO7															

I. PROGRAMME OBJECTIVES

- PO1. Demonstrate the professional practice skills (pedagogic, personal, social and professional competencies) needed to be successful in their professional practice;
- PO2. Demonstrate the ability to master the theory, principles and practice of generale chemistry;

- PO3. Understand the field of chemistry education in terms of terminology from theory and practice, research, curriculum design and teaching-learning;
- PO4. Conduct research, develop and practice in chemistry teaching techniques and methods, so that learning chemistry might be easy and fun;
- PO5. Analyze education management policies, curricula, evaluation and teaching technologies related to chemistry learning;
- PO6. Apply the knowledge gained from research and discovery in the learning process for instructional development and curriculum;
- PO7. Demonstrate the leadership roles in general chemistry education, including specifically leadership in teaching, research, curriculum and instruction.

II. LEARNING OUTCOMES

LEARNING OUTCOMES	ATTITUDE AND VALUE	<p>LO1. Enabling to cooperate and having good morals, ethics and personality in completing their duties, social sensitivity and high concern for the community and its environment.</p> <p>LO2. Respect to the diversity of cultures, views, beliefs, and religions as well as other people's original opinions/ findings and love the country and support world peace as citizens</p> <p>LO3. Upholding the rule of law and having the spirit to prioritize the interests of the nation and the wider community.</p> <p>LO4. Enabling to internalize the entrepreneurial spirit, academic values and norms that are properly related to honesty, ethics, attribution, copyright, confidentiality and ownership of data</p>
	<p>WORK ABILITY <i>(Able to develop knowledge, technology, and or art in the scientific field or professional practice through research, to produce innovative and tested works)</i></p>	<p>LO5. Implementing and developing knowledge and technology in the field of chemistry education through reasoning and scientific research based on logical, critical, systematic, and creative thinking.</p> <p>LO6. Developing chemistry education through scientific research, or producing scientific works along with study concepts based on scientific rules arranged in the form of a thesis.</p> <p>LO7. Publishing the results of research in the field of chemistry education in scientific journals nationally and internationally accredited.</p>

		<p>LO8. Increasing the capacity of independent learning.</p> <p>LO9. Having structured learning skills for self-development, science, and career sustainability.</p> <p>LO10. Enabling to think critically, make informed decisions, and communicate effectively, academically, and ethically.</p>
	<p>KNOWLEDGE ASSIGNMENT <i>(Able to solve the problems of science, technology, and or art in the scientific field through an inter or multidisciplinary approach)</i></p>	<p>LO11. Documenting, storing, auditing, securing, and rediscovering research data for further research purposes.</p> <p>LO12. Identifying the scientific field of the research object and positioning it into a research map.</p> <p>LO13. Carrying out chemistry education research based on research maps, with an inter- or multi-disciplinary approach, independently or in collaboration with other institutions.</p>
	<p>AUTHORITY AND RESPONSIBILITY <i>(Able to manage research and development that is beneficial to society and science, and able to get national and international recognition)</i></p>	<p>LO14. Developing and maintaining networks with colleagues, including in the broader research institutions and communities.</p> <p>LO15. Arranging and communicating ideas and arguments that can be scientifically accountable and academic ethics, through various forms of media to the community, especially the academic community.</p>

III. SUBJECT SPECIFIC CRITERIA

No.	Subjec Specific	Courses
1	Pedagogical Content Knowledge	<p>1.1. Science Philosophy</p> <p>1.2. Thesis</p> <p>1.3. Academic Writing</p> <p>1.4. Current Issues in Chemistry Education</p> <p>1.5. Computers Skill In Chemistry</p> <p>1.6. Visual and Visualization in Chemistry Education</p> <p>1.7. Science and Ethics In Chemistry</p>
2	Pedagogical Knowledge	<p>2.1. Thesis Proposal</p> <p>2.2. Educational Research Methodology</p> <p>2.3. Innovation in Chemistry Learning</p>

		<ul style="list-style-type: none"> 2.4. Design and Implementation of Chemistry Curriculum 2.5. Development of Assessment and Evaluation in Chemistry Education 2.6. Models of Chemistry Teaching and Learning 2.7. Chemistry Teaching and Learning Practices 2.8. Problem Solving In Chemistry Education
3	Content Knowledge	<ul style="list-style-type: none"> 3.1. Statistics 3.2. Chemical Spectroscopy 3.3. Inorganic Structural Chemistry 3.4. Structure Elucidation of Organic Chemistry 3.5. Solution Chemistry and Analytical Electrochemistry 3.6. Biomolecule and Genetics Engineering 3.7. Chemical Practicum 3.8. Special Topics in Chemistry 3.9. Mechanisms and Reactivity of Organic and Inorganic Reactions